



## Biological Safety Cabinets: Certification

“Proper maintenance of (biosafety) cabinets used for work at all biosafety levels cannot be over emphasized. ... A BSC must be routinely inspected and tested by trained personnel, following strict protocols, to verify that it is working properly. This process is referred to as certification of the cabinet and should be performed annually.” Reference: BMBL 5th Edition. [Appendix A – Primary Containment for Biohazards: Selection, Installation and Use of Biological Safety Cabinets](#). *Note: If working with chemotherapy drugs or nanomaterials, BSC’s must be certified every 6 months.*

### Biosafety Cabinet (BSC) Certification

**Certification is conducted annually by Precision Air.** Recommendations and requirements to certify biosafety cabinets come from a variety of sources. All manufacturers and NSF International recommend field certification of biosafety cabinets. CDC and NIH state that it is "imperative" that Class I and II biosafety cabinets be tested and certified (BMBL, 5th edition) and NIH funded research grants require cabinet certification. NIH *Guidelines on the Recombinant DNA* references the need to ensure biosafety cabinets are maintained and properly functioning (Laboratory Containment, Section IV –B-7-e (4). Finally, proper maintenance, including certification, of biosafety cabinets falls under the OSHA General Duty clause.

**When does my biosafety cabinet need to be certified?** Class I and II biosafety cabinets should be tested and certified at the time of installation and at least annually thereafter. In addition, recertification should be performed any time in the following events: HEPA filters are changed, maintenance repairs are made to internal parts, a cabinet is to be relocated, and clean-up of a major contamination event.

**What does field certification involve?** Field certification consists of required tests related to containment (personnel, product and environmental protection), and optional tests related to worker comfort and safety.

Required tests include airflow velocity profiles (downflow and inflow), airflow smoke patterns, HEPA filter leak test, and cabinet integrity test (for cabinets with exterior contaminated plenums). In addition, a site installation assessment is performed for cabinets connected to facility exhaust systems.

Worker comfort and safety tests include electrical safety (when appropriate), lighting intensity, noise level and vibration.

**Preparation for a BSC recertification.** Before the technician can begin to test your cabinet, you will need to remove any materials and equipment from the cabinet. You should also wipe down the work surface, interior walls and grille with an appropriate disinfectant for the type of work you are doing.

**Does a moveable biosafety cabinet need to be recertified each time it is moved?**

A moveable biosafety cabinet does not require recertification if it is moved short distances (e.g. across a hallway or into a contiguous room). Moveable cabinets would require recertification if moved into another building or become damaged during relocation.

**What is the difference between biosafety cabinet disinfection and decontamination?**

Disinfection: the elimination of virtually all pathogenic microorganisms on inanimate objects with the exception of large numbers of bacterial endospores, reducing the level of microbial contamination to an acceptably safe level.

Disinfection is done each day before work begins in a biosafety cabinet and when the work is completed. Usually 70% isopropyl alcohol or a 10% bleach solution is used. If the cabinet is wiped down with a bleach solution, a second wiping with 70% isopropyl alcohol must be done to prevent pitting of the cabinet surfaces.

Decontamination: Process of making an object, or area safe by absorbing, destroying, neutralizing, making harmless a variety of organisms.

Decontamination is done using paraformaldehyde gas or other types of gases, requires certified professionals and takes approximately five hours. This process is done prior to moving or relocating a biosafety cabinet, after a major contamination event or prior to changing HEPA filters. Recertification of biosafety cabinets after changing HEPA filters is a requirement.

Initial certifications, yearly/biannual recertifications, and decontamination of biosafety cabinets are exclusively done by Precision Air.

If you have any questions regarding your biosafety cabinet, please call Bernie Menuey (6-6440) or Eric Steelman (6-4254).